



**IMAGINING**  
the possibilities.  
MAKING THEM HAPPEN.

**Indiana  
Department of Education**

**Glenda Ritz, NBCT**

Indiana Superintendent of Public Instruction



# ISTEP+ Part 1 Item Sampler for Mathematics Grades 3-8

**Updated September 2016**



# Purpose of the Item Sampler

- To describe the item types found in ISTEP+ Part 1 Mathematics
- To provide and explain exemplary responses for the item types found in ISTEP+ Part 1
- To explain how open-ended math items are scored
- To provide model items that teachers may use when constructing items for classroom assessments

Note: Item Samplers are not practice tests.



# Scoring

- Constructed-Response
  - Content: 2 points
  - Process: 2 points
- Extended-Response
  - Content: 3 points
  - Process: 3 points

<http://www.doe.in.gov/assessment/istep-grades-3-8>



# Important Process Standards

- PS.1: Make sense of problems and persevere in solving them.
- PS.2: Reason abstractly and quantitatively.
- PS.3: Construct viable arguments and critique the reasoning of others.
- PS.4: Model with mathematics.
- PS.5: Use appropriate tools strategically.
- PS.6: Attend to precision.
- PS.7: Look for and make use of structure.
- PS.8: Look for and express regularity and repeated reasoning.



# Sample Constructed-Response Grade 4

**Content Standard:**

**4.M.3:** Use the four operations (addition, subtraction, multiplication and division) to solve real-world problems involving distances, intervals of time, volumes, masses of objects, and money. Include addition and subtraction problems involving simple fractions and problems that require expressing measurements given in a larger unit in terms of a smaller unit.

**Process Standards: 1, 3**

Item Type: Constructed-Response	Pts: 4	DOK: 2	Grade: 4
---------------------------------	--------	--------	----------

**The Grade 4 item is shown on the next slide.**



# Sample Constructed-Response

## Grade 4

### Part A

1 kilogram = 1,000 grams

John's pumpkin has a mass of 2 kilograms. The mass of Greg's pumpkin is 500 grams less than John's pumpkin. What is the mass, in grams, of Greg's pumpkin?

Show All Work

\_\_\_\_\_ grams

### Part B

John thinks the mass of the two pumpkins, in grams, is greater than 3,000 grams. Use words, numbers, and/or symbols to explain if John is correct.



# Sample Constructed-Response

## Grade 4

### Exemplary Response:

$$2,000 - 500 = 1,500$$

Or other valid process

AND

1,500 grams

AND

Yes, the mass of the two pumpkins is 3,500 grams, which is greater than 3,000 grams.

OR

$$2,000 \text{ grams} + 1,500 \text{ grams} = 3,500 \text{ grams. } 3,500 > 3,000$$

OR

Other valid response



# Sample Extended-Response Grade 6

## Content Standard:

**6.AF.5:** Solve equations of the form  $x + p = q$ ,  $x - p = q$ ,  $px = q$ , and  $x/p = q$  fluently for cases in which  $p$ ,  $q$  and  $x$  are all nonnegative rational numbers. Represent real world problems using equations of these forms and solve such problems.

**Process Standards:** 2, 3, 4, 6

Calculator: Yes

Item Type: Extended-Response

Pts: 6

DOK: 3

Grade: 6

**The Grade 6 item is shown on the next two slides.**





# Sample Extended-Response

## Grade 6

Lynn is baking 20 cakes. She needs blueberries, strawberries, and some other ingredients for her recipe.

- She needs 22 pounds of blueberries.
- She needs twice as many pounds of blueberries as she does strawberries.

### Part A

Write an equation that can be used to determine the number of pounds of strawberries Lynn needs. Be sure to define the variable in your equation.

Define the variable \_\_\_\_\_

Equation \_\_\_\_\_



# Sample Extended-Response

## Grade 6

### Part B

Lynn buys the blueberries for \$3 per pound and the strawberries for \$2 per pound.

What is the total cost of the blueberries and strawberries?

Show All Work

Answer \$ \_\_\_\_\_

### Part C

In addition to the cost of the berries, Lynn spends \$52 on the other ingredients needed to make the 20 cakes.

Lynn wants to make \$5 for each cake she sells, taking into account the amount she spends on ALL ingredients.

For how much should Lynn sell each cake in order to make \$5 per cake? Use words, numbers, and/or symbols to justify your answer.



# Sample Extended-Response Grade 6

## Exemplary Response:

$p$  represents the number of pounds of strawberries Lynn needs

$$2p = 22$$

OR other valid equation and definition of the variable

AND

\$88

AND

Lynn should sell each cake for \$12.

## Sample Process:

$$2p = 22$$

$$p = 22/2$$

$$p = 11$$

$$22 \times \$3 = \$66$$

$$11 \times \$2 = \$22$$

$$\$66 + \$22 = \$88$$

$$\$88 + \$52 = \$140$$

$$\$140/20 = \$7 \text{ per cake}$$

$$\$7 + \$5 = \$12$$

OR

Other valid process



# Best Practices

- Teachers use the Item Samplers as models for the creation of their own math items.
- Students use them to learn to show their work and develop strategies for responding to different math item types.



# Frequently Asked Questions

- Responses outside of the given lines (paper-and-pencil test)
- Scoring multiple-part items
- Grammar and spelling



# Resources

- <http://www.doe.in.gov/assessment>
  - Item Samplers
  - Testing Windows
  - Program Manual
  - Blueprints
  - Experience Online
  - Instructional and Assessment Guidance
  - Released Items and Scoring Notes
  - Rubrics

# Questions

- Please contact the following staff members if you have questions regarding Mathematics:
  - Mary Williams, Grades 3-5, at [mwilliams@doe.in.gov](mailto:mwilliams@doe.in.gov).
  - Joe Staten, Grades 6-8 and 10, at [jstaten@doe.in.gov](mailto:jstaten@doe.in.gov).
- For other questions, please contact the Office of Student Assessment by calling (317) 232-9050 or via email at [INassessments@doe.in.gov](mailto:INassessments@doe.in.gov).



**Indiana  
Department of Education**

**Glenda Ritz, NBCT**

Indiana Superintendent of Public Instruction